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THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA *and* THE MAYO FOUNDATION FOR THE PROMOTION OF MEDICAL EDUCATION AND RESEARCH

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as published in the JOURNAL-LANCET,
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COMMITTEE UPON THE RELATIONS OF THE MEDICAL SCHOOL
WITH THE MAYO FOUNDATION



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THE MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA AND THE MAYO FOUNDATION FOR THE PROMOTION OF MEDICAL EDUCATION AND RESEARCH

FOREWORD

The medical profession of the State and the alumni of the medical school everywhere will be interested to know, from authoritative sources, the nature and the terms of the proposals which have been framed and submitted to the Board of Regents for affiliation of the Mayo Foundation with the Medical School of the University of Minnesota.

The profession at large should be interested in an event big with possibilities for the future of medical education in this State.

Not alone the theories, but the conditions of medical education in Minnesota, bearing upon this question, should be understood. The advantages of affiliation should be appraised. The objections to it should be carefully weighed and its net values determined.

With these objects in view, this statement is offered. Carefully reviewed by representatives of both parties to the proposed arrangement, it issues with authority.

It presents (a) the plan of relations during the proposed experimental period of affiliation; (b) the main outlines of the ultimate plan to which temporary affiliation, if successful, may lead.

MEDICAL EDUCATION IN MINNESOTA

In the unification of medical education Minnesota has accomplished much. In its control by the State University, the standards of preparation for the practice of medicine are assured. By its ready adoption of educational advances, through a quarter of a century of progress; by the generous equipment of its scientific laboratories; by the attainment of a teaching hospital providing, in part, for its major clinics; by the upbuilding of a large and efficient outpatient service, the University Medical School has placed itself in the forefront of teaching institutions.

The acquirement of rank, like the inheritance of privilege, imposes the principle of *noblesse*

oblige. The State is committed to the nearest and the speediest approach it may make to the highest ideals of medical education. It has accepted the obligation of medical research in the service of the people.

In all State institutions, development is contingent upon adequate appropriation. In a young commonwealth, of rapid growth and diversified interests, the demand for the means of support is imperative in every field of education. The medical school has received its share, but that share has been inadequate to the supply of its multiplying needs. It has called to its aid the public hospitals of the Twin Cities and with helpful response. Yet with a taste of the teaching values of hospital beds all its own, it finds the quasi-control of other service unsatisfactory. It now requires an additional pavilion of one hundred and fifty beds, a home for the School for Nurses and suitable quarters for its outpatient dispensary. Finally, it needs room, on the new campus, to house the one badly dislocated branch of its service,—the department of pathology, bacteriology and public health. Doubtless it will have to accept the fulfillment of these needs by piecemeal and with as much grace of patience as its faculty can muster. It does not possess today the full requirements of effective undergraduate training, to say nothing of the needs of graduate teaching. Its perennial cry is: "More beds!"

At the present moment, a new problem,—a new opportunity of service awaits it.

THE PROBLEM OF GRADUATE MEDICAL TEACHING

The need in America of the Graduate School in Medicine is apparent. It is a need not yet formulated as to type; a need which finds individual expression and must be individually met. Methods of meeting it are engaging the minds of medical educators both east and west.

The practical closure of the field of graduate study abroad has accentuated the desire for domestic opportunity; has stimulated teachers and

instructors to provide it. Men of medicine in America have long felt that the pilgrimage of medical graduates to European clinics is, in large degree, a tradition. They have long held that the mechanism and material of research may be found within our own medical doors. The clinical Mecca across seas has always been sought by many men of merit, and by more men of means. Too often the fruitful student has been barred of his full fruition by stay-at-home demands for his daily bread. With a modicum of relief from financial pressure, with a nearby chance of study, he is ready to grasp eagerly the offer of graduate teaching.

The tendency to specialism in medicine creates the objective of the great majority who go to the clinics of Europe; but for one who seeks his goal through patient years of preparation in the schools, the many among specialists break into full bloom during a summer's junket to the Old World. To medical educators of today, this forcing method no longer appeals. The argument of fitness is gaining in the moral sense of men, and in the fit training of specialists University schools recognize one of the great needs of the hour and, therefore, one of the chief ends of graduate medical teaching.

Willing students wait the opportunity; but other things, also, are needed for the development of the Graduate School in Medicine. The task calls for men; for men of large vision as graduate teachers, for men who can evolve method and material other than that which serves the purposes of undergraduate instruction; men, who, foregoing the ways and works of the poly-clinic,—the historic vaudeville of so-called graduate study,—can lead the graduate student up to larger conceptions of advanced scientific medicine; men who can cultivate in others the desire to lay broad and deep the foundations of really specialized function in the practice of the profession, who can inspire in their fellows the passion for research and the habit of following in the footsteps of scientific truth, wherever they may lead.

There is needed, too, a wealth alike of clinical and laboratory material,—a wealth which the ordinary medical school, even of University parentage, does not possess; which, often, indeed, it does not enjoy to the full measure of its undergraduate demands. Graduate teaching in experimental medicine or surgery, or in the specialties of practice, must be built upon a broad basis of laboratory study in each relational field, while its

special clinical problems must be made continually the subject of laboratory investigation. Large must be the mass of available material from which the adequate selection of norms and of aberrants, for the uses of the specialist in study, may be drawn.

The appreciation of these great essentials of graduate medical teaching has made the approach of teachers to its problems very slow. It should no longer bar them where means and men and material are to be found.

THE GRADUATE SCHOOL IN MEDICINE OF THE UNIVERSITY OF MINNESOTA

With the authority of the Board of Regents, the Administrative Board of the Medical School has launched, within the past year, the Graduate School in Medicine. Realizing that the definition of graduate work must be clear, that a distinct line of demarcation must be drawn between it and the practitioners' courses of the past, that the conditions under which it is offered must accord with academic traditions, the school has established itself as a branch of the Graduate School proper of the University of Minnesota. It is under the joint direction of the Dean of the Graduate School, the Dean of the Medical School, and a committee of the medical faculty on graduate teaching.

It offers a number of distinct opportunities, viz.:

(a) The pursuit of special research problems, under chosen supervision, for unstated periods of time.

(b) Courses of graduate study in the general field of medicine, from which selection of major and minor subjects is made. These courses, under direction of the committee, include relational studies along clinical lines and foundational studies in laboratory branches. They involve the preparation of a thesis. They are arranged in time periods of two and three years. They lead, finally, to the degrees of Master of Science and Doctor of Science, respectively.

(c) Teaching fellowships, awarded to the selected graduate in medicine, who desires to train himself in a given specialty. These fellowships, in limited number, are offered in Surgery, Internal Medicine, Obstetrics, Pediatrics, Eye, Ear, Nose and Throat Diseases, and Nervous Diseases. They cover a period of three years of study and carry stipends of \$500, \$750, and \$1,000 for student support in the three successive years. Fellows devote themselves exclusively to their chosen courses for eleven months

per annum. They give one-fourth of their time to teaching assistance, within their specialty. One-fourth of the entire period is devoted to related laboratory studies. Major and minor subjects are chosen and a thesis, upon some approved problem within the scope of the major, is required. These courses lead to the degree of Doctor of Science, qualified by the special subject pursued.

(d) Graduate scholarships, awarded for periods of two or three years, to the selected graduate in medicine, who wishes, similarly, to prepare for the practice of a given specialty. These scholarships do not carry any stipend, but are exempted from payment of tuition fees. They require the devotion of only a minor measure of time to assistant teaching and cover only nine months in each year. The requirements of these scholarships are otherwise identical with those governing the teaching fellowships, excepting that two years of successful study may lead to the degree of Master of Science, while the three year period leads to the Doctorate in Science.

Six teaching fellowships and five graduate scholarships have been provided for the present year. Several of these are already filled and the number of applicants has been surprisingly great. These positions will be increased as means of support can be found.

The opportunity of graduate teaching appears to be limited only by the capacity of clinics and laboratories to provide suitably for the needs of students. Every effective means of increasing this capacity is to be sought. Experience has proved the unfitness of public hospitals for purposes of graduate study. The graduate's work must be done where clinical and laboratory facilities are definitely controlled and freely granted.

THE MAYO FOUNDATION FOR THE PROMOTION OF MEDICAL EDUCATION AND RESEARCH

The large volume of clinical and laboratory material gathered in the Mayo Clinic at Rochester, Minnesota, suggested to its staff, some ten years ago, the idea of placing it within reach of graduate students in medicine. Large success in any professional calling always awakens in men the instinct of professional parentage. It has awakened to a new and a notable departure in this professional group.

For a time, the opportunity of graduate study was informally extended to a few men who desired to remain in residence at Rochester for that purpose. Some five years ago, nine graduate fel-

lowships were created by the clinic, under annual and progressively increasing support stipends for each of a succession of three years. As the laboratory and clinical facilities for research have grown, this number of fellowships has been steadily increased until, at the present time, thirty-six graduate students have been appointed and are actively pursuing their studies. Already ninety-five men owe a graduate allegiance, as untitled alumni, to the Mayo Clinic.

Its staff has long recognized the desirability of placing this graduate work, with the large educational and scientific resources at its command, under University control; and very recently, important steps have been taken to organize these opportunities and to effect this relationship. To secure the most nearly ideal conditions for its fulfillment, it has seemed desirable to create a permanent mechanism which, while utilizing the educational and scientific values the clinic affords, can be held distinct from the Mayo Clinic as a professional enterprise.

At the suggestion, indeed, of representatives of the University, the Mayo Foundation for the Promotion of Medical Education and Research has been created and incorporated. An endowment fund has been provided by its founders. This fund now amounts to over \$1,500,000 and is to be further increased in principal and by accumulating interest from year to year. It has been placed, temporarily, in the hands of an independent board of trustees. It should be noted that this endowment fund is already removed from the hands of the Founders and has been conveyed under a trust agreement which specifies the purposes for which it is to be used and the ultimate disposition to be made of it. It cannot be employed for the support of the clinic. It is specifically devoted to medical education and research. For the present, an annual budget is provided for the support of the Mayo Foundation. So long as the foundation remains independent, this budget will be expended and the educational and research work of the Foundation will be conducted by a chosen Board of Scientific Directors. The available clinical and laboratory material of the clinic is placed at the disposal of the Foundation for scientific uses.

The problem which is now pressing for solution in the minds of medical educators in Minnesota is this: Shall the unity of medical education in the State be preserved and strengthened by affiliation with this new field of teaching and research? Shall the scientific opportunities of

the Mayo Foundation be cultivated and standardized under the control of the University? Shall they be directed and applied to educational uses from the University base? Or, shall two distinct and independent centers of medical education and research exist, instead, in the State of Minnesota?

For the Mayo Foundation, as a seat of graduate teaching and research, has been established. Affiliated with the medical school or not, it will go on in the good work it has begun. Its values in men and in material for educative purposes will not be permitted to go to waste.

THE PROPOSALS FOR AFFILIATION BETWEEN THE
MEDICAL SCHOOL OF THE UNIVERSITY OF MINNESOTA
AND THE MAYO FOUNDATION FOR THE
PROMOTION OF MEDICAL EDUCATION AND RESEARCH

THE PROPOSED PLAN OF AFFILIATION FOR AN
EXPERIMENTAL PERIOD

Negotiations for affiliation between the Medical School of the University of Minnesota and the Mayo Foundation for the Promotion of Medical Education and Research were initiated by Dean E. P. Lyon, at a meeting of the Administrative Board of the Medical School on October 8, 1914. A committee, consisting of the President of the University, the Dean, and the Secretary of the Medical School, and two other members of the Administrative Board was appointed.

This committee has acted conjointly with a committee of the Mayo Foundation and proposals have been formulated for an experimental period of affiliation between the two institutions. The terms of these proposals are as follows:

a. The Scientific Directors of the Mayo Foundation are to be nominated to and approved by the Administrative Board of the Medical School and, upon such approval, are to be appointed by the Board of Regents of the University of Minnesota.

b. The members of the staff of the Mayo Foundation are to be nominated by the Directors and approved by the Administrative Board of the Medical School.

c. The experimental period of affiliation proposed may be terminated at any time upon one year's notice by either party and upon the fulfillment of existing obligations to the student body.

d. The purposes of the affiliation are to be:

1. The joint conduct of graduate work. It is stipulated that all graduate students, working in

either institution, are to be matriculated and registered at the University under the rules of the Graduate School; that all students' fees are to be paid to the University; that no charges upon the University are to be made for any work done in or by the Mayo Foundation; that details of graduate work, in general, and of each individual student's work, in particular, are to be arranged by joint committee; that credit for work at the University or at the Mayo Foundation is to be given by the University. It will be provided that all students receiving University credit shall spend a certain prescribed portion of time in residence at the University.

2. The interchange of graduate scholars and fellows; the details of such interchanges and the regulations governing them, in point of time to be spent and of work to be done by these scholars or fellows, at either the University or at the Mayo Foundation, to be determined by joint committee.

3. The interchange of workers, in assistantships, special lectureships, direction of laboratory work, conduct of elective courses and pursuit of research, in either field, as between the faculty of the Medical School and the members of the staff of the Mayo Foundation; the details of such interchange to be arranged by joint committee.

e. It is further provided:

1. That courses of graduate instruction in the affiliated institutions and the teachers conducting them, shall be approved by the committee of the Medical School on Graduate Teaching and by the Dean of the Graduate School, and that the conferring of degrees, to which such work contributes, is to be recommended by the Graduate School to the Board of Regents of the University of Minnesota; and

2. That the Committee of the Medical School on Graduate Teaching be authorized to act conjointly with a Committee of the Mayo Foundation in arranging details of the above plan.

Such an experimental period of affiliation has been approved by vote of the General Faculty. The specific proposals, outlined above, have been approved by the Administrative Board of the Medical School and have been accepted by the Mayo Foundation. They have been submitted to the Board of Regents of the University of Minnesota for consideration and final action.

THE TENTATIVE PROPOSALS FOR PERMANENT
AFFILIATION

Emphasis should be put upon the fact that the sole issue now under discussion is that of tem-

porary affiliation and that the plan of permanent relationship has not been finally approved. These proposals are essentially tentative.

The endowment fund is to remain untouched, is to be increased annually in principal and by accrued interest, during the experimental period of affiliation. Should this experimental period be undertaken and prove successful, the Founders of the Mayo Foundation have already provided that, with the approval of the University, the present Trustees in charge of the endowment fund shall surrender it, for entire control, in investment and expenditure, alike, under the purposes declared in the gift, to the Board of Regents of the University of Minnesota. No restrictions are placed upon the Regents, excepting that the educational and research work is to be maintained at Rochester in affiliation with and directed by the University.

It is provided that should the Mayo Clinic, for which the University will be charged with no responsibility whatever, fail of self-support or deteriorate in the quality of its work, and no longer supply, for the uses of the Foundation, sufficient clinical and laboratory material, the Board of Regents may, at its discretion, make other arrangements for the continuance of the Foundation. Suggestion of a subsequent renewal of relations with a possibly resurrected clinic at any time has been discussed, but is not regarded, by either party, as an essential point. In all other respects, the conditions of the experimental period of affiliation are to become those of the permanent relation, subject to modification by joint agreement when the event is to be accomplished.

Summarized, the proposals mean:

a. The Mayo Foundation is an accomplished fact. It exists for the prosecution of medical research and the encouragement of graduate study.

b. It is endowed with an ample fund to be used for the specific purposes of the Foundation and for nothing else.

c. That fund is irrecoverably in the hands of a Board of Trustees instructed, if affiliation becomes permanent, to turn it over to the Board of University Regents. It will belong to the University.

d. The Foundation, its work, its workers and its finances, will be definitely separate from the clinic.

e. The Foundation is to be definitely controlled as to expenditures, personnel of staff,

courses of instruction and credits by the Board of Regents.

f. Graduate students, directed by the University, will do work both at the University and in the Mayo Foundation at Rochester.

THE APPRAISAL OF VALUES

It is well that the advantages which offer to the University Medical School in this affiliation be carefully appraised. Such a gift to medical education and research is so unusual and looms so large in its possibilities that one marvels that its benefits should need statement. Nevertheless, a State institution is the one type of beneficiary which has the duty of examining carefully the conditions of a gift. The values not only of the gift itself, but of the opportunities it opens up, are cited.

It might seem enough to say that with the ultimate control of this endowment for higher medical education and research by the Board of University Regents, the whole tale of benefits to flow from it would be inclusively told. But this event takes exception to the mathematical principle that the greater includes the less, perhaps because the seemingly less is really the larger.

The association of the Medical School with a body of professional men who have successfully applied economic principles to the practice of medicine, who have approximated the ideals of medical service, who have achieved distinctive and effective methods of clinical investigation, has clearly apparent worth.

The contribution to the service of the Medical School of men of ability and distinction who will give their time and energy to the work of the Foundation under the direction of the University; the devotion of an immense mass of scientific material to the uses of education and research, and both without a dollar of expense to the State, either for buildings or maintenance, have a significance that does not need emphasis.

The immediate development, with a minimum of cost to the University, of a Graduate School in Medicine which will stand absolutely alone in the sphere of medical education in America, as compassed today, and will set the type of graduate instruction for the country at large, is an opportunity not to be put by and one of which leading medical educators throughout the country are taking full account.

The substantial improvement and immediate enlargement of the mechanism of efficient training of specialists in medicine,—a most important

service to the State,—and again without increase of budget, means more to the future of medical education than can be foretold.

The stimulative influence of the work of each affiliate upon the other, by means of the ready exchange of teachers and workers, will be far greater by virtue of the distinctive place and character of each institution than were they completely merged and their individual identity lost.

The stimulus to medical research which must come out of the friendly rivalry and the mutual assistance of men in the two institutions; the enlarged vision of problems which should widen with the increased means of solving them, should mean the higher development alike of the teaching faculty and the Foundation staff.

The encouragement that this affiliation would afford to the development of other agencies of medical education within the State, the suggestion it conveys of extra-mural assistance to be sought in the service of medical teaching, should not be overlooked.

THE OBJECTIONS TO AFFILIATION

Doubtless there are objections to the proposed affiliation which it is better not to define; but, indubitably, there are medical men and medical educators, of lofty purpose, who are fearful of so new and so broad a departure in the history of the Medical School.

That affiliation of the Medical School with the Mayo Foundation is an improper thing, because the latter will derive its financial support and its scientific material mainly from the Mayo Clinic and because the clinic is a private enterprise and conducted for profit, appears to be the crux of opposing argument in the minds of many.

Could any contention that the Mayo Clinic is ethically, professionally or scientifically unfit be sustained, this argument might gain weight. Since the ablest and most sincere opponents of the plan hasten to lay a tribute of respect before the men who have founded the Mayo Foundation, the argument loses force. Granted the integrity of the institution, the plea applies as properly to every clinical teacher who, whether singly or in association with his fellows, is, simultaneously with his teaching function, engaged in the private practice of his profession.

The proposition that the Mayo Foundation is inseparable from the Mayo Clinic and that in affiliating with the first the University necessarily goes into partnership with a private professional business, is destroyed by many a precedent and demands specific correction.

METHOD OF SEPARATING THE FOUNDATION FROM THE CLINIC

A careful examination of the work now conducted at Rochester shows that it is practicable to separate the scientific and educational work (which will belong to the Foundation) from the business of treating the sick (which will belong to the clinic).

The scientific and research work occupies nearly three floors of the new building. To these floors patients do not go. Half of the staff members never see patients. Some are not even remotely concerned with the patients of the clinic. They are full-time laboratory research workers. Others divide their time between practical duties connected with the clinic and investigation.

The method of dividing the foundation from the clinic will be worked out along these lines: Any laboratory devoted entirely to research and teaching will be supported by the Foundation. Any apparatus, animals, chemical supplies, etc., needed for these purposes will be furnished by the Foundation. The salary of any chemist, pathologist or other worker engaged wholly in teaching and research will be paid by the Foundation. Part of the salary of men giving part of their time to this work may be borne by the Foundation. Expenses of scientific publication, etc., may be paid by the Foundation. Fellowships may be supported by the Foundation. In fact, the Foundation may do any of the things for the furtherance of medical education and research which would be proper for it to undertake if it stood alone, and may do only such things.

On the other hand, all expense connected with the care and treatment of pay patients must be borne by the clinic. A man engaged wholly in this work could not be paid by, nor connected with the Foundation. A laboratory used only for clinical diagnosis would be supported by the clinic, not by the Foundation.

Thus we get concepts of the Foundation and the Clinic standing as separate and distinct institutions, each with a certain number of full-time workers not engaged in the other at all, and with a certain number of part-time workers divided between the two institutions. The Foundation would by lease or gift be entitled to quarters in the clinic building and by proper arrangement have the right to use the clinical material for purposes of research and education to the extent that the clinic may deem wise and to the extent that the Foundation may desire.

The clinical, part-time teachers in the Univer-

sity Medical School send specimens from their private practice to the University laboratories. They use their private case histories in writing articles which go out in the name of the University. They make use of University pathologists for making autopsies in private cases, and the materials are worked up in the University. All of these constitute analogies of the proper separation of the Mayo Foundation from the Mayo Clinic in the same way that the University work of part-time teachers is separated from their private practice.

OTHER FEARS

That affiliation with the Mayo Foundation will serve to arrest the development of an adequate clinical system at the University, is the expression of a fear which has taken possession of some who frankly say that could this apprehension be removed they would find no other valid objection to the plan. The difficulty is that, while this fear is believed by the administrative officers of the University and the Medical School to be without foundation, to be a mere ghost which these men have raised, no assurance to the contrary can, with propriety, be given. The administration cannot commit future Boards of Regents or future legislatures to any program of clinical development.

It may only be said that this fear is unshared by the proponents of the plan, that it has never been shared by any of them in either institution; and that, on the contrary, they hold that the natural stimulus to the growth of the Medical School which the affiliation must be, will insure the speedier completion of the absolutely essential hospital laboratory of the clinical teacher.

That the Mayo Foundation would not be adequately controlled by the University and would be subject to the dictation of its Founders, to the detriment of its stated purposes, is an argument most effectively answered by inviting the

reader to review the foregoing statement of the terms of affiliation. A fund of one and a half million dollars or more to go under permanent affiliation and without reserve, save as to the location of the work, into the hands of the Board of University Regents; a Board of Directors of the Foundation approved by the Medical School and appointed by the Board of Regents; a Foundation staff similarly approved by the Medical School; registration of students, courses of instruction and credits for study, controlled by the University, are the safeguards which the plan details.

That the State University should confine its activities strictly to the University campus is a time-honored and traditional view. It is not the view of modern educators. To avail itself of every fit agency of education and research throughout the State, by which its effective force may be increased, is as much the part of the modern State University as is the prosecution of extension work on a campus as wide as the State itself.

AFTERWORD

After all, the one real question involved in the project for affiliation of the Mayo Foundation with the Medical School is this: Will that affiliation, in substantial measure, enable the State to achieve more quickly, to approximate more closely, to realize more fully the highest ideals of medical education, to the attainment of which, as the public parent of medical education in the State, it is pledged?

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THE MAYO FOUNDATION FROM THE STANDPOINT OF THE GRADUATE SCHOOL

BY GUY STANTON FORD, Ph. D.

Dean of the Graduate School
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In discussing co-operation with the Mayo Foundation from the standpoint of the Graduate School, it is at least not difficult to keep in mind the essential nature of the problem which the regents, administrative officers, and faculties of the University are considering. It is an experiment in training some thirty or forty well prepared young graduates of high grade medical schools for careers as medical scientists, medical college teachers, or specialists in active practice. The net result, if the difficult work is well done, is, in all three fields, a needed social service. The University has the right and the obligation to undertake it and, in doing its part, to make use of every opportunity and means for adequate training in this relatively unoccupied field. It cannot too often be emphasized that what is here contemplated has nothing to do with the old polyclinic idea of a graduate school of medicine where a group of busy city practitioners gave a hurried six weeks' course to practitioners who went home with a certificate to frame and a debt to pay by sending patients to the city specialists. The plan in contemplation will require of a selected group that they spend three years in advanced work, meeting at the end the most rigid tests possible, that of showing their calibre, as investigators, by the preparation of a scientific contribution which definitely increases our ability to cope with disease. Medical educators and university administrators who are assuming the responsibility of making this exacting preparation possible could have but one possible fear and that is,—not that there might be too much material, too many qualified instructors, too much financial support,—but rather that in every point there may be too little. In considering this essentially educational problem all fears may be reserved for our limitations and none for our opportunity to diminish them by co-operation and control of the Mayo Foundation.

Since September, 1914, the Graduate Committee of the Medical School, as the responsible unit of the Graduate School, has been directing the work of a group of a half-dozen such graduate students as I have described above. The problems involved have never been adequately worked out in any university. It is all path-breaking

work. Only the four essentials of all adequate graduate work were clear—only well prepared students should be encouraged, only well trained instructors should be in charge, adequate clinical facilities and material were essential and the results of bringing these three factors together should be tested by the established standards of scientific research. In none of these things should undergraduate standards prevail. Where a half-dozen cases or operations might give the undergraduate student the accepted treatment, a hundred might be too few to enable the graduate student to strike out in new paths.

This was the situation when, after following in a general way the discussions of the medical faculty concerning co-operation with the Mayo Foundation for graduate medical research and education, I made a personal investigation of the matter from the standpoint of the Graduate School. If the reader will recall the first three essentials of graduate work mentioned above, qualified students, qualified instructors, adequate material and support, he will have in mind the approximate standards any Graduate School administrator would apply.

My investigation was made in the second week of January and I found a condition existing which satisfied me upon all three points. There was in existence a well endowed teaching foundation whose funds were already sufficient to carry its part of a teaching staff and laboratory equipment, and in addition give good paying fellowships to a group of graduate students. Of the wealth of material and equipment for such students I should need to make no mention, if it were not for the fact that I am not speaking of the first floor of the Mayo Building primarily, nor of the operating rooms at St. Mary's Hospital. I found what I was looking for in the laboratories, museum and library of the upper floors, and in the countless case records in the basement of the Mayo Building. The richness of this material, not seen by the casual visitor, furnishes opportunities for graduate medical work in certain lines such as can be found nowhere else on this continent, nor probably in the world. I found a research and teaching staff, available and at work, sufficient to do its full part in an

independent teaching foundation, and most certainly its part in a co-operative plan such as that under consideration. Some of these were doing nothing but research. The only difference observed between those who were engaged part time in clinical practice and our own part time staff was that the private practice in Rochester was conducted under the acid test of observers from all over the world, and in Minneapolis our staff does its teaching in one-half of the day and devotes the other half in its own offices to private practice. Of the active staff at Rochester about eighteen were graduates or former members of the University Faculty. This applies also to four of the five educational directors. I found finally that a body of about thirty graduate students of international character was engaged on a three-year course and that their preparation was such that I should have no hesitancy in admitting them, with one exception, to the Graduate School at the University of Minnesota for the work we began last fall. As this whole matter of approving students, staff, and educational budget is to be in the hands of the University authorities we should have only ourselves to blame if standards and conditions are not maintained. In other words, there existed an endowed, well equipped, well-manned research and teaching institution needing only the things we

could best supply to make the combination of the Mayo Foundation and the Medical School of the University a unique and at present unparalleled Graduate School of Medicine.

There seemed to me, as the result of this visit, three possibilities. The Mayo Foundation might be left to live its own independent existence, it might seek affiliation with some other university outside the State, or, lastly, it might become what its generous founders desire, a present ally and, ultimately, a great and beneficent part of the University of that State where those founders were born and have spent their lives.

If there be any principle at the basis of our University as at present organized which prevents it from doing its great educational work for the State and the nation and the world by taking advantage of this and similar opportunities when they shall arise in agriculture, arts, engineering or medicine, then let us rebuild on principles that will enable us to fit our function.

It seems fairly easy to understand, I hope, why anyone interested in the development of graduate work would rather face the present fears of the few than have the next generation point out his folly in not having favored at least, an experimental period of co-operation with the Mayo Foundation.

HISTORY OF NEGOTIATIONS BETWEEN THE MEDICAL SCHOOL AND THE MAYO FOUNDATION

The question of establishing relations, for educational and scientific work, between the Minnesota Medical School and the Mayo Clinic, at Rochester, has been discussed, informally, for a long time.

Upon October 8th, 1914, the Dean of the Medical School proposed to the Administrative Board of the Medical School that this question of affiliation be considered. The Dean was instructed to appoint a committee to confer in the matter with the Advisory Committee of the Medical Alumni Association and with the Doctors Mayo.

A few days later such committee, consisting of the President of the University, the Dean and the Secretary of the Medical School, and the chiefs of two departments, was appointed.

On November 14th, 1914, a tentative conference of the committee with the Advisory Committee of the Medical Alumni Association was had.

At a regular meeting of the General Faculty

of the Medical School on November 19th, 1914, the question of affiliation was informally discussed. The Faculty voted to request the Administrative Board of the Medical School to give the Faculty an opportunity for the discussion of any proposed plan before final action should be taken.

Upon November 29th, 1914, an initial conference between the committee of the Medical School and a committee representing the Mayo Clinic was held at Rochester. At this meeting, the proposal of the creation of the Mayo Foundation for the Promotion of Medical Education and Research was made. The following day this proposal was accepted by the Doctors Mayo.

Conferences between representatives of the two committees have been had, from time to time, as negotiations have proceeded.

On December 3rd, 1914, the committee of the Medical School presented its report to the Administrative Board of the School. Certain

amendments of the plans submitted were proposed. The committee was instructed to continue negotiations, to submit these amendments to the Doctors Mayo, and to prepare a further report. The amendments were so submitted and, in the main, accepted.

On December 16th, 1914, the Administrative Board of the Medical School met and received a revised report, which was fully discussed. The general principle of the affiliation was approved by vote. The committee was instructed to submit the proposals for discussion to the advisory committee of the Alumni Association and to the General Faculty.

On January 19th, 1915, a second conference with the Advisory Committee of the Medical Alumni Association was held.

Following this conference, the officials of the School received from the Alumni Committee the following resolution:

"Doubting the wisdom of the general principle of affiliation between the University and any private institution, we, the Advisory Committee of the Alumni Association of the Medical School, approve of a temporary arrangement between the University of Minnesota and the Mayo Foundation to accomplish the following purposes only:

- a. The interchange of opportunity for graduate study.
- b. Opportunity for interchange of members of the teaching staffs."

On January 21st, 1915, a meeting of the General Faculty was called. Copies of proposals were placed in the hands of the members. A full discussion followed. It was voted to adjourn consideration and to postpone vote for two weeks.

A second meeting was held February 5th, 1915, and the proposals were again discussed at length. By a vote of 39 to 26, the following resolution was adopted:

"Resolved, That this Faculty recommends to the Administrative Board the establishment of affiliation in graduate teaching and in exchange of workers with the Mayo Foundation, for a trial period, terminable on one year's notice by either party and upon the fulfillment of existing obligations to students, under educational conditions approved by the University."

On February 8th, 1915, the Administrative Board of the Medical School met. The proposed experimental period of affiliation with the Mayo Foundation was approved by a vote of nine to one. The committee was instructed to prepare resolutions, covering this action; to submit copies to members of the Board for com-

ment and to present the same to the Board of Regents.

Upon February 18th, 1915, resolutions prepared, in accordance with the foregoing instructions, were transmitted to the President for presentation to the Board.

On March 4th, 1915, the above resolutions were reported to the regular meeting of the Administrative Board and two minor changes were suggested. As so revised, the resolutions were finally approved, the secretary was instructed to record them, to furnish a copy to each member of the Board, and to re-submit final revision to the President.

On March 6th, 1915, such revised resolutions were transmitted to the President. They read as follows:

RESOLUTIONS

Whereas: An institution known as the Mayo Foundation for the Promotion of Medical Education and Research has been incorporated, in which educational and scientific work in medicine is being and will be done; and

Whereas: Certain proposals for an experimental period of affiliation between the Medical School and the Mayo Foundation have been formulated and considered; and

Whereas: It is understood (a) that the Mayo Foundation is to be supported during the proposed experimental period of affiliation by an annual budget to be provided by the Founders; (b) that this budget is to be expended by a Board of Directors, which will also be charged with the supervision of the educational and scientific work of the Foundation; (c) that this Board of Scientific Directors is to consist of six physicians or medical scientists, five of whom are to be nominated by the Founders and one by the Medical School, all of whom are to be submitted for approval to the Administrative Board of the Medical School and, upon such approval, are to be submitted for confirmation to the Board of Regents of the University of Minnesota; and (d) that the teaching and scientific work of the Foundation is to be conducted by a staff, the members of which are to be nominated by the Board of Directors of the Foundation and are to be submitted for approval to the Administrative Board of the Medical School.

Resolved, That such an affiliation for such an experimental period be recommended to the Board of Regents of the University of Minnesota, with the understanding that this period of affiliation may be terminated at any time upon notice of one year by either party to the affilia-

tion and upon the completion of existing obligations to students.

Resolved, That (a) a reciprocal relationship for the conduct of graduate work be undertaken, with the understanding that credit for work in either place is to be given by the University; that registration of graduate students is to be made at the University; that students' fees are to be paid to the University; that no charges are to be made upon the University for work done in or by the Mayo Foundation; that the details of such reciprocal relation and of the work to be undertaken by graduate students, in general and for each individual student matriculated at either place, are to be arranged by joint committee.

(b) That an interchange of graduate scholars and fellows as between the University and the Mayo Foundation be had; that the details of such interchanges and the regulations to govern them, in point of time and of work to be done by graduate scholars or fellows in either place, are to be worked out by joint committee.

(c) That an arrangement of opportunities for interchange of workers, in the way of assistantships, special lectureships, direction of laboratory work, conduct of elective courses and the pursuit of research, in either field, by the Faculty or Foundation members, is to be made and that the details of such interchanges of workers are to be arranged by joint committee.

(d) That courses of graduate instruction conducted in the affiliated institutions and the teachers conducting the same, be under the approval of the Committee on Graduate Teaching and of the Dean of the Graduate School; and that the conferring of degrees, to which such work contributes, is to be recommended by the Graduate School to the Board of Regents.

(e) That the Committee on Graduate Teaching

of the Medical School, including the dean of the Graduate School, be authorized to act conjointly with a Committee of the Mayo Foundation in arranging the details of the matters referred to above.

THE CONDUCT OF NEGOTIATIONS

The bodies officially concerned in the conduct of these negotiations are:

a. The Administrative Board of the Medical School, consisting of the President of the University, the Dean, the Secretary of the Medical School, the heads of all departments, and one member elected by the General Faculty; charged with the legislative and administrative affairs of the School, subject to the Board of Regents.

b. The Committee of the Administrative Board entrusted with actual negotiations.

c. The General Faculty of the Medical School, composed of all teachers of professorial rank and of instructors. Its function is purely advisory.

d. The Board of Regents of the University of Minnesota, its governing body.

e. The Advisory Committee of the Medical Alumni Association, in this instance an unofficial consulting body, composed of graduates of the Medical School.

f. The Mayo Clinic, consisting of the Doctors William J. and Charles H. Mayo, of Drs. Judd, Balfour, and Plummer, and the staff of physicians associated with them. The activities of the clinic, for many years, have been: (1), in the conduct of medical and surgical practice; (2), in the investigation of disease; (3), in the graduate teaching of medicine and surgery.

g. The Mayo Foundation for the Promotion of Medical Education and Research, created in November, 1914, and since incorporated, endowed by a trust fund of \$1,500,000, to which is transferred the activities of the clinic designated under (2) and (3).

PRECEDENTS FOR AFFILIATION

The University of Minnesota, through the Agricultural Department, is already affiliated with the farming interests of the State. It carries on experiments with private farms, orchards and herds.

The mining students are obliged to spend a certain amount of time in privately owned mines on the range. The Michigan School of Mines is located at Houghton, entirely for the practical benefit to be gained from the local mines. Other

mining schools have similar co-operative arrangements.

Our forestry students do work in various parts of the State. The University of Washington Forestry Department does practical work in the mills and logging camps of the State. New York State maintains a Forestry Department in connection with Syracuse University, a private institution.

The Medical School of the University of Min-

nesota, through its Department of Pathology and Bacteriology, does work for physicians in private practice, performs autopsies and makes laboratory tests. The Department of Pharmacology makes special examinations for physicians and others.

Until recently the Medical School was affiliated with various private hospitals. Under the new elective curriculum and plan of graduate instruction there seems no good reason why such affiliations should not be renewed. Each proposition should be considered on its merits.

The University of Illinois and other state universities do a large part of their medical teaching in affiliated private hospitals.

Our Graduate School permits its students to do work for credit anywhere in the world where facilities for research exist. This is a general rule of graduate schools.

A committee, composed of leading clinical teachers of the United States and Canada, was appointed by the American Medical Association, about a year ago, to consider plans for the reorganization of clinical teaching in medical schools. The report of the committee, submitted by the president of the American Medical Association, Dr. Victor C. Vaughan, of the University of Michigan, has just been published. The following is a quotation from this report: "As many extramural hospitals as possible should be brought into affiliation with the medical schools to provide for the development of graduate work which now needs careful consideration."

The University of Cincinnati, a municipal institution supported by taxation, is affiliated with many manufactories and building firms. The students of its Engineering School get all their shop practice in these private commercial concerns.

On the other hand, the Missouri Botanical Garden, owned by the City of St. Louis, is affiliated with Washington University, a private institution.

The State of Pennsylvania appropriates money for various private hospitals in which medical teaching is done.

The Massachusetts Institute of Technology, the "Land Grant College of Mechanic Arts of the State," receives state aid and affiliates in Public Health teaching with Harvard University, a non-public corporation.

President Pritchett states: "The device of a subsidiary board in control of a special department of university work is by no means unusual. The Hooper Institute of Medical Research of the University of California is governed by a board of seven men appointed by the Regents of the University."

Several State Universities are affiliated with the Marine Biological Laboratory located at Woods Hole, Mass. They pay for the support of research tables and send their graduate students there.

The Marine Biological Station at San Diego, formerly independent, and affiliated with the University of California, has recently been taken over by that University. It is run, however, by a "Local Board." This is almost a perfect precedent for the proposed temporary affiliation with the Mayo Foundation, to be followed, if desired, by permanent union.

Animal Husbandry students at the University of Ohio spend their first year in residence, their second on stock farms, their third again in residence, and their last year on other farms. The catalog says, "Some of the leading stockmen of Ohio and other States have agreed to co-operate in arranging this course."

The Wisconsin catalog says, "The College of Agriculture has inaugurated a movement for the establishment of a system of accredited farms." Candidates for the M. S. degree may gain one semester's credit by work on such farms.

Purdue University, the Engineering College of the State of Indiana, works in close co-operation with the electric and steam railways of the State. Students carry on tests and do other work under service conditions on these privately owned railways. The school is especially proud of its courses in locomotive engineering on this account.

Finally may be mentioned the extensive plan of affiliation in seventh year or interne work undertaken by our Minnesota Medical School. The hospital in which a student takes his internship must be satisfactory to the school, i. e., must give him satisfactory facilities and instruction. This year of work is required for graduation. The school is making this type of affiliation all the time.



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